

**BEFORE  
THE PUBLIC SERVICE COMMISSION OF  
SOUTH CAROLINA**

**DOCKET NO. 2019-226-E**

South Carolina Energy Freedom Act (House Bill 3659) Proceeding Related to S.C. Code Ann. Section 58-37-40 and Integrated Resource Plans for Dominion Energy South Carolina, Incorporated

**JOINT COMMENTS OF SOUTH CAROLINA COASTAL CONSERVATION LEAGUE, SOUTHERN ALLIANCE FOR CLEAN ENERGY, CAROLINAS CLEAN ENERGY BUSINESS ALLIANCE, AND SIERRA CLUB**

Pursuant to S.C. Code Ann. § 58-37-40(C)(3) and Final Order No. 2020-832, issued by the South Carolina Public Service Commission (“Commission”) on December 23, 2020 (“Order”), the South Carolina Coastal Conservation League and Southern Alliance for Clean Energy (“CCL and SACE”), Carolinas Clean Energy Business Alliance, Inc., (“CCEBA”), and Sierra Club (collectively, “Intervenors”) are pleased to submit comments in response to Dominion Energy South Carolina’s (“DESC”) “Modified 2020 Integrated Resource Plan,” (“Modified IRP”) filed on February 19, 2021. These comments discuss the extent to which the Modified IRP does and does not comply with the Commission’s Order, and recommend further remedies that the Commission may order to address the deficiencies in the Modified IRP.<sup>1</sup>

Notwithstanding DESC's failure to comply with many aspects of the Commission's Order in the Modified IRP, Intervenor's do not recommend that the Modified

<sup>1</sup> S.C. Code Ann. § 58-37-40(C)(3) (on review of the Modified IRP, “the commission at its discretion may determine whether to accept the revised integrated resource plan or to mandate further remedies that the commission deems appropriate.”)

IRP be rejected outright. Rather, Intervenor recommend that the Commission approve the Modified IRP, conditioned on certain modifications being made and other actions taken to address the issues identified in Intervenor's comments. These comments also provide relevant background on DESC's 2020 IRP, the Commission's Order rejecting that plan and directing further analysis, and the extent to which the Modified IRP does and does not comply with the Order.

The Intervenor appreciate the on-going opportunity to participate in this docket and acknowledge and appreciate the efforts of the Commission and staff over the past year in this docket. The testimony of intervening parties, the Commission's Order, and DESC's Modified IRP highlight the importance of robust stakeholder engagement. The transparency afforded to the public and all parties pursuant to Act 62's new IRP procedures ensures that the Company's planning receives the third-party review necessary for a robust, accurate, and high-quality IRP. The DESC IRP is a vitally important document—one that provides a strategic roadmap for the utility and builds a foundation for future investment decisions while minimizing risk for ratepayers in a world of quickly changing energy generation technology and increasing regulatory costs of fossil fuel emissions.

### **INTRODUCTION**

The Commission's Order directed Dominion to implement significant changes to its integrated resource planning process and methodology, to be implemented, variously, in a Modified IRP, IRP Updates, and DESC's next full IRP. These changes laid the groundwork to save South Carolina ratepayers substantial amounts of money and to reduce the risk of economic harm from increasing but volatile gas prices and likely carbon regulations. Compared to DESC's original 2020 IRP, the updates and corrections ordered

by this Commission produced resource portfolios that would save ratepayers millions of dollars from closing coal plants, increasing renewable energy deployment, and boosting energy efficiency.

The modeling conducted by DESC and presented in the Modified IRP supports two overarching conclusions that reinforce the findings and directives of the Order: that adding solar and storage in the near term, and retiring the Wateree and Williams coal plants by 2028, will reduce ratepayer costs and lower the risk that ratepayers will suffer economic harm from volatility in gas prices and looming carbon regulations.

Unfortunately, DESC's Modified IRP also made other changes that were not directed by the Commission, and that are inconsistent with the Commission's Order. The Modified IRP also reveals, for the first time, that DESC has been planning to construct over 400 megawatts of new gas combustion turbines (the "CT Plan"), a resource planning decision that was not detailed or reviewed in the 2020 IRP and was not justified by any modeling or analysis done in support of the Modified IRP. In fact, DESC disclosed its new CT Plan only obliquely in its new Short-Term Action Plan ("Action Plan"), which the Commission required DESC to include in its Modified IRP. The Action Plan has never been subjected to discovery or full review, and DESC's inclusion of over 400 MW of newly constructed combustion turbines in that plan, with no supporting analysis in its original or modified IRP, is a violation of Act 62 requirements and must be rejected.

Although DESC's Modified IRP still has significant flaws, Intervenor submit that, rather than rejecting the Modified IRP outright as it is empowered to do, the Commission should approve the Modified IRP subject to certain modifications and conditions necessary to ensure compliance with Act 62 and secure ratepayer benefits, pursuant to its authority

“to mandate further remedies that the commission deems appropriate.”<sup>2</sup> Specifically, we recommend that the Commission:

1. Approve RP8 to lock in long-term savings from coal retirements, contingent upon additional modeling in subsequent proceedings related to both near term renewable energy additions and clean energy replacement capacity options for the coal units identified for retirement;
2. Approve RP8 as the most reasonable and prudent plan and either (1) require DESC to conduct additional modeling to validate that RP8 would be strengthened and better meet the “reasonable and prudent” standard of Act 62 if near-term solar and storage resources were added to that resource plan; or (2) require that DESC conduct this additional modeling of near-term solar and storage additions in either its 2021 IRP Update or a DESC-specific competitive procurement docket.
3. Reject the CT Plan;
4. Immediately open the coal docket as dictated in the Order to allow for full transparency in evaluating DESC’s retirement studies and start the transition from planning to procurement for clean energy replacement resources as soon as possible;
5. Where the Commission orders any action within an annual IRP update, provide interested parties an adequate opportunity to review and comment on the updated IRP;

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<sup>2</sup> S.C. Code Ann. § 58-37-40(C)(3).

6. Require DESC to adjust its Reliability Factors consistent with Appendix A; and

7. Require DESC to adhere to Order 2020-832 in its application of the approved minimax regrets and cost range analyses, as well as the plan selection criteria approved by this Commission.

Because the Modified IRP reflects certain methodological changes and other additions not contained in the original IRP or directed by the Commission, Intervenors further recommend that if the Commission does decide to approve the Modified IRP, it clarify in its Order that such approval will not have any precedential effect with regard to such changes and additions, which will be subject to review and comment in future IRP proceedings.

## **COMMENTS**

### **I. The Commission's Order**

The Commission's December 23, 2020 Order rejected Dominion's 2020 IRP and required Dominion to make modifications in that plan, future Updates, and future IRPs. This order—the first to review a utility IRP under the process and standards set by Act 62—was the result of the Commission's thorough review of all the testimony submitted in this case and its engagement on the complex issues presented in this proceeding. The Order included the following findings and conclusions, which are relevant to evaluating the Modified IRP:

1. The Commission required DESC to re-run its IRP modeling using the set of assumptions recommended in SCSBA Witness Sercy's Rebuttal Testimony and Sierra Club Witness Derek Stenclik's Rebuttal Testimony, and to include the results

of that modeling in its Modified IRP.<sup>3</sup> The Commission specified that, other than as required in the Order, “DESC shall not make any changes to its modeling or other methodologies, or the sources of data from which it derives its planning assumptions, without disclosing those changes with its update, and describing in concrete and specific terms the impact of those changes on the analysis in the IRP.”<sup>4</sup>

2. The Commission required DESC, in its Modified IRP, to “include additional candidate resource plans, representing the near-term deployment of renewables.”<sup>5</sup> These include two candidate resource plans, RP7a and RP7b, recommended by SCSBA Witness Sercy. RP7a modified DESC’s proposed RP7 resource plan by adding 400 MW of flexible solar PPAs in 2023 instead of 2026, and RP7b made this change and also added 100 MW of battery storage in 2023.<sup>6</sup>

3. The Commission “required the Company to “reanalyze its IRP portfolios, [and] consider alternative portfolios that retire Williams and Wateree early and replaces them with clean energy technology.”<sup>7</sup> The Commission required DESC to address a “comprehensive retirement of DESC coal plants” in an ongoing IRP Stakeholder process<sup>8</sup> and “incorporate the conclusions from the comprehensive coal retirement analysis called for in [the] Order” in the 2022 IRP Update.<sup>9</sup>

4. In order for the Company to meet the December 31, 2025 deadline to retrofit the Williams and Wateree coal-fired power plants to meet the new federal Effluent Limitation Guidelines rule, the Commission opened a new docket “to assess the

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<sup>3</sup> Id. at 18, 89 ¶ 6b.

<sup>4</sup> Id. at 94 ¶ 10.

<sup>5</sup> Id. at 89 ¶ 6a.

<sup>6</sup> Id. at 30-31.

<sup>7</sup> Id. at 40.

<sup>8</sup> Id. at 90 ¶ 7c.

<sup>9</sup> Id. at 92-93 ¶ 8i.

retirement and replacement of the Company's coal plants." The new proceeding "will evaluate the reliability risks and environmental costs of continued operation of the coal plants as well as options, informed by resource bids, to replace legacy coal technology with state-of-the-art clean energy."<sup>10</sup>

5. The Commission required DESC, in coordination with the Office of Regulatory Staff ("ORS"), to establish an ongoing IRP Stakeholder Process "for the purpose of considering, and inviting stakeholder input and review on, certain potentially complex changes to DESC's IRP development methodology, inputs and assumptions." Among other issues, the IRP Stakeholder Process would initially a comprehensive retirement analysis of DESC coal plants.<sup>11</sup>

## **II. Analysis of the Modified IRP**

### **A. DESC's Modified IRP Implements Required Changes that Reduce Costs for Ratepayers**

With regard to some of the changes ordered by the Commission, DESC's Modified IRP fails to comply with either the letter or the spirit of the Commission's Order, and, as discussed in Sections II.B and II.C below, additional remedial steps are warranted.

Nevertheless, the Modified IRP includes a number of changes, ordered by the Commission, that substantially improve the integrity of the plan and may ultimately lead to millions of dollars in ratepayer savings. The modeling results in the Modified IRP demonstrate that retiring coal, increasing efficiency savings, and adding renewable resources are the most reasonable and prudent means for reducing cost and risk for ratepayers.

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<sup>10</sup> Id.

<sup>11</sup> Id. at 91-92.

### 1. Improved Modeling Assumptions

The Order requires “DESC to re-run its IRP modeling using the set of assumptions recommended in SCSBA Witness Sercy's Rebuttal Testimony and Sierra Club Witness Derek Stenclik's Rebuttal Testimony, and to include the results of that modeling in its Modified 2020 IRP.”<sup>12</sup> The Intervenors note and appreciate that DESC appropriately updated its capital cost assumptions for battery energy storage and combustion turbine technologies and revised the de-escalation rate for battery storage and solar technologies, as required by the Commission. These changes are a key reason that DESC’s RP8 became the preferred portfolio.

### 2. Energy Efficiency

In its Order, the Commission directed DESC to work with the DSM Advisory Group to conduct a "rapid assessment" of the cost-effectiveness and achievability of ramping up its current portfolio to achieve at least a 1% level of savings in the years 2022, 2023, and 2024, and to include the results of this rapid assessment in its Modified 2020 IRP.<sup>13</sup> In response, the Modified IRP includes a revised rapid assessment finding that an expanded DSM portfolio with annual savings meeting a 1% of retail sales target for 2022, 2023 and 2024 is achievable and cost-effective.<sup>14</sup> The Rapid DSM Assessment shows both the value of additional EE as well as the need for a more robust assessment of DSM.

The Commission also directed DESC to include in the Modified IRP (1) “action steps the Company will take to complete a comprehensive evaluation of the cost-effectiveness and achievability of DSM portfolios ranging from 1% to 2% savings, as

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<sup>12</sup> Id. at 18, 89-90.

<sup>13</sup> Id. at 91 (Ordering paragraph 6e).

<sup>14</sup> Id. at 43.



identified in steps 3 through 5 of Hearing Exhibit 16;”<sup>15</sup> and (2) “a set of modifications to the Company's existing DSM portfolio that would achieve at least a 1% level of savings in the years 2022, 2023, and 2024,” and to screen such measures for cost-effectiveness and achievability.<sup>16</sup>

DESC’s analysis shows that portfolios with higher levels of DSM cost less: higher levels of DSM lower the portfolio cost for all portfolios except for RP8 under the \$12/ton CO<sub>2</sub> price assumption.<sup>17</sup> These results highlight the benefit to ratepayers of higher levels of energy efficiency and demand response.

### 3. Clean Energy Additions

Pursuant to the Order, DESC’s Modified 2020 IRP and its 2021 IRP Update “shall include additional candidate resource plans, representing the near-term deployment of renewables as described in the testimony of SCSBA Witness Sercy (specifically, the resource plans identified as RP7a and RP7b).<sup>18</sup> As a consequence of this updated modeling and DESC’s application of the mini-max regrets and range analyses required by the Commission, DESC’s original “preferred plan,” RP2, now performs near or at the bottom of the resource plan options evaluated by the Company, whereas RP7b3 performs near the top.

The minimax regrets analysis conducted by DESC, which measures how the various resource plans perform on a cost basis across all modeled scenarios and sensitivities, resulted in RP2 scoring 13 out of 14 resource plans when calculating the most risk to customers. Similarly, the cost range analysis conducted by DESC, which measures

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<sup>15</sup> Order at 91 (Ordering paragraph 6f).

<sup>16</sup> Order at 91 (Ordering paragraph 6d).

<sup>17</sup> Id. at 54.

<sup>18</sup> Id. at 89 (Ordering paragraph 6a); *see also* id. at 82-86, 89.

the possible range of costs that could result across all modeled scenarios and sensitivities, demonstrated that RP2 has the highest cost range of all the resource plans modeled.

Alternatively, RP7b3, the early solar and storage scenario recommended for additional modeling by the Intervenors, outperformed all other portfolios on its cost range score except the early coal retirement plans, RP3 and RP8. RP7b3 ranked fourth on the minimax regrets analysis behind RP8, RP3, and the original RP7. However, when correcting for the mistakes in DESC's application of the minimax regrets analysis, RP7b3 also outperforms RP7.

As discussed in more detail below, RP8 was not modeled with the same short-term solar and storage additions ordered for RP7.

#### 4. Coal Retirement

As a result of the revisions ordered by the Commission, DESC has determined that a new resource plan, RP8, is its preferred resource plan. RP8 retires the Wateree and Williams coal plants in 2028 and converts Cope coal plant to natural gas in 2030. Overall, the plan will result in the retirement of 2,124 MW of coal and gas generation and the addition of 1,469 MW of combined cycle and combustion turbine capacity beginning in 2028, as well as the eventual addition of 2,000 MW<sup>19</sup> of solar and 700 MW of storage beginning in 2030 and ending in 2049. DESC ranks this preferred portfolio highest for ratepayer impact, reliability, renewable energy, CO<sub>2</sub> emissions, risk, and resource diversity at lowest cost.

The Intervenors commend the proposal to retire coal generation expeditiously. The retirement of Wateree and Williams coal plants will help the DESC system better integrate

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<sup>19</sup> 100 MW of the 2,000 MW of solar is scheduled to be added in 2026 and 2027.

renewable energy, improve system reliability, increase resource flexibility, and significantly reduce CO<sub>2</sub> emissions and other environmental pollutants. Rather than investing a quarter billion dollars in environmental upgrades for legacy coal generation, the early retirement of these units would allow DESC ratepayers to invest their money in cleaner, more flexible technology that can better adapt to future uncertainties of renewable growth, electric vehicles, and changes to customer loads.

However, as discussed further below, RP8 suffers from one significant flaw, in that it proposes to fill the near-term production shortfall left by the earlier retirement of these units not with clean renewable generation, but with more fossil generation in the form of gas-fired CTs and combined cycle plants. In the Modified IRP, DESC does not analyze whether a near-term procurement of renewables would more efficiently meet these resource needs. This means that, while RP8 is demonstrably better than the other resource plans included in the Modified IRP, neither Intervenor nor the Commission know with any certainty whether early retirement of coal assets, combined with near-term procurement of renewables, would create even more benefits for ratepayers.

#### 5. Stakeholder Involvement

The Order directs DESC to engage with stakeholders in the selection of a new capacity expansion model, as well as in a longer-term stakeholder process to inform future IRPs, enhancing transparency and furthering the purposes of Act 62's IRP provisions. Greater stakeholder involvement will result in improved process and should promote efficient resolution of many issues, including the potential to avoid litigation of these issues in future proceedings, conserving the resources of the Commission and parties.

## 6. Short-Term Action Plan

The Order requires DESC to include a Short-Term Action Plan in its Modified IRP and future IRPs. The wisdom of this requirement is already evident: DESC's Action Plan now reveals a 405MW CT Plan, which would construct five fossil units at three sites in the immediate future. Incredibly, the details of this 405MW CT Plan – which has apparently been in the works for some time – were completely omitted from both DESC's 2020 IRP and the modeling conducted for the Modified IRP. As discussed further below, Intervenor recommends that the Commission approve the Short-Term Action Plan **on the condition that** DESC's CT Plan be removed from the document.

## 7. Conclusion

DESC's Modified IRP demonstrates that retiring coal, increasing efficiency savings, and adding renewable resources are the most reasonable and prudent means for reducing cost and risk for ratepayers. These results are robust across the range of the CO<sub>2</sub> and gas prices DESC evaluated.<sup>20</sup> The results show that using corrected inputs, pursuing RP8 and adding near-term renewables will result in a more cost effective and less risky plan as compared to RP2, which DESC originally presented to the Commission as DESC's preferred plan. In other words, this Commission's review and decision worked exactly as the General Assembly intended when it passed the Energy Freedom Act's rigorous new IRP provisions.

### **B. DESC's Modified IRP Fails to Comply with Several Aspects of the Commission's Order and Contains New Errors that Could Force Ratepayers to Needlessly Pay Millions of Dollars**

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<sup>20</sup> Modified IRP at 72-74.

While the Modified IRP is a substantial improvement over DESC's original IRP, it falls short of the Commission's Order and Act 62 in a number of important respects.

1. DESC Has Not Yet Modeled Near-Term Additions of Solar and Storage with Coal Retirements

While Intervenors welcome DESC's decision to retire the Wateree and Williams coal plants, the only early-retirement scenario considered in the Modified IRP replaces Williams and Wateree with 1076 MW of gas-fired capacity.

Mr. Stenlik's direct testimony provided alternative portfolios that replaced the retired coal plants with a portfolio of solar PV and battery energy storage resources and improved assumptions on energy efficiency and reduced load growth.<sup>21</sup> His testimony pointed out that a one-for-one replacement of the retiring Wateree and Williams coal plant capacity was neither necessary nor economic.<sup>22</sup> DESC's system is currently overbuilt (as evidenced by the fact that Wateree 2 will be offline until Spring 2022),<sup>23</sup> has relatively high reserve margins, and relatively modest load growth.<sup>24</sup> As a result, a partial replacement of the retiring coal plants with solar and battery storage resources can be a viable solution that results in savings to ratepayers. This was demonstrated in Mr. Stenlik's direct testimony, which retired 1,294 MW of coal capacity and replaced it with only 460 MW of battery storage and solar capacity while maintaining minimum reserve margin requirements.<sup>25</sup>

A key directive of the Commission's Order was for Dominion to model, in the Modified IRP, short-term renewables procurement in order to explore whether the addition of renewable energy prior to the phase-out of the federal tax credit would save ratepayers

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<sup>21</sup> Tr. Vol.3 p. 705.30-34.

<sup>22</sup> Tr. Vol.3 p. 705.32; Surrebuttal of Derek Stenlik, Tr. Vol.3 p. 711.15-16.

<sup>23</sup> Tr. Vol.3, p. 705.23:13-15; Tr. Vol 2, p. 414:14:23.

<sup>24</sup> Tr. Vol.3 p. 705.16-22.

<sup>25</sup> Tr. Vol.3 p.705.33-34.

money as compared to DESC's original preferred plan (RP2).<sup>26</sup> This requirement was consistent with the Commission's more general directive to DESC to fully vet the potential for short-term actions, such as early coal retirement, retirement of aging peaking and gas steam resources, renewable additions, and DSM expansion.<sup>27</sup> The analysis of near-term actions required by the Commission would produce the information necessary to secure these savings during the current IRP cycle (i.e., within the Short-Term Action Plan) and prior to external events that might render them moot.<sup>28</sup>

The Modified IRP results demonstrate that short term renewable procurement does, in fact, lower the costs of RP7, which outperforms the Company's original preferred plan, RP2. However, because the Modified IRP presents RP8, for the first time, as the preferred portfolio, the Commission is faced with a situation in which DESC has only modeled short term renewables procurement within a single portfolio and has not considered it as a way to further reduce the cost of the already low-cost early retirement portfolio, RP8. With potential ratepayer savings in the balance, the federal tax credit clock continues to tick without the relevant analysis being available.

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<sup>26</sup> Order at 86 (directing modeling of near term solar additions "in order to inform decisions regarding the possible conduct of near-term competitive solicitations"); and *id.* at 16-17, 30-33 (describing, in part, the basis in federal tax policy of the need for quick analysis).

<sup>27</sup> Order at 39-40.

<sup>28</sup> The Commission Order required the 3-year Action Plan filed in February 2021 to include, at minimum, a DSM action plan—including analysis conducted immediately during 2021—a process to choose a capacity expansion model, retirement studies, and "any actions related to competitive procurement of renewable energy that may be indicated based on the additional production cost modeling that the Commission is requiring in this Order." Order at 88. The Commission directed DESC to prepare this Action Plan due to DESC's "failure to model renewable additions prior to 2026," *see id.* at 16-17, 30-33, and also required DESC to correct its solar PPA price inputs to, in part, enable better evaluation of short-term renewable energy procurement, *Id.* at 49. The Commission Order also refers to the need for DESC to conduct a coal plant retirement analysis "as soon as possible," *Id.* at 40, and cites the fact that DESC's peaker and gas plant retirement analysis failed to model potential benefits of near-term retirements, *Id.* at 39. Finally, the Commission stated that the plant retirement analysis must be performed in time to inform the 2022 IRP Update. *Id.* at 40.

The evidence in the record already demonstrates that the near-term addition of solar and storage resources provides a more cost effective and less risky means of meeting DESC's system needs on an energy-only basis where no capacity need was being addressed. DESC included only some small additions of solar and storage, but did not model any significant near-term renewable additions as part of RP8;<sup>29</sup> the savings shown for RP7 over RP2, in the Modified IRP, indicates that the near-term addition of solar and storage resources could further reduce the cost and risk to ratepayers if added to RP8.

The Commission has a number of options available to remedy this deficiency in the Modified IRP. The EFA gives the Commission the authority, after a modified IRP is filed, to accept the plan or "mandate further remedies that the commission deems appropriate."<sup>30</sup> Thus, the Commission has the authority to require DESC to conduct additional modeling to validate that RP8 would be strengthened and better meet the "reasonable and prudent" standard of Act 62 if near-term solar and storage resources were added to that resource plan. DESC has the ability to perform these modeling updates in fairly short order, having just accomplished modeling within 60 days to meet the requirements of the Commission's Order. While some time and effort are required to perform modeling, the modeling is a tiny fraction of the cost of adding new power plants without fully considering all reasonable alternatives. Iterative learning for the benefit of ratepayers and the state as a whole is part of this process and should become a hallmark of careful resource planning in South Carolina.

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<sup>29</sup> RP8 includes some small 50MW additions of solar in 2026 and 2027, then 100 MW/year starting in 2030; it includes storage additions starting in 2032. Modified IRP at 7.

<sup>30</sup> S.C. Code Ann. § 58-37-40(C).

The Commission could also elect to defer any additional modeling of near-term solar and storage additions to either the 2021 IRP update or a DESC-specific competitive procurement docket. In such a process, RP8 could be vetted against various iterations of near-term solar and storage additions as recommended by Mr. Sercy for RP7, which would determine whether near-term solar and storage additions result in the most reasonable and prudent plan and the procurement of those resources are deemed to be in the public interest.

Regardless of which option the Commission chooses, the Intervenor believe that excusing DESC's failure to further evaluate near-term solar and storage additions in conjunction with the Modified IRP's selection of RP8 as the preferred portfolio would frustrate the intent of Act 62 and de facto eliminate any possibility of new solar or storage additions to the DESC system until at least 2025. This delay could deprive DESC ratepayers of significant cost savings and rural communities of clean energy investment during a critical federal tax policy window. While the rest of the nation moves forward on low-cost renewable energy development, DESC territory would stand still for years for want of a few computer modeling runs.

**2. The Modified IRP Fails to Comply with the Commission's Order on Plan Selection Methodology**

The Modified IRP is also deficient because it fails to implement the resource plan selection methodologies ordered by the Commission. In the Order, the Commission found that comparing risk metric values for candidate resource plans "is an appropriate means for considering Act 62 factors such as commodity price risk and diversity of generation supply." The Commission further found that the cost range and minimax regret analyses recommended by SCSBA witness Sercy "are simple, appropriate methodologies that can feasibly be implemented in a Modified 2020 IRP." The Commission directed DESC to



include in the Modified IRP a comparison of candidate resource plans employing simple quantitative risk metrics, including cost ranges and regret scores, as recommended by Mr. Sercy.<sup>31</sup>

Although the Modified IRP purports to apply the minimax regrets and cost range analyses, in doing so DESC deviated from the approach proposed by Mr. Sercy and approved by the Commission.<sup>32</sup> Rather than treating the amount of DSM/EE as resource options to be considered in each resource portfolio, similar to the treatment of solar and storage in RP7, DESC treated the low, medium, and high DSM/EE resource scenarios as sensitivities to be applied to each resource plan, similar to CO2 and fuel costs. This approach is in direct contradiction of the Commission's finding that "DESC should include both DSM and purchased power as potential resource options that could be incorporated into candidate resource plans."<sup>33</sup>

DESC also directly contradicts the explicit finding in the Order "that the recommendations of Mr. Sercy related to the use of cost range and minimax regret analyses are appropriate for bringing DESC's 2020 (IRP) into compliance with the requirements of Act 62 [...]."<sup>34</sup> Rather than simply accept and apply the Commission's findings in the Order, DESC continues to challenge the validity of the Commission approved minimax regrets and cost range requirements "because of their methodological flaws."<sup>35</sup>

Further, DESC ignores the Commission's rejection of a "most likely scenario" approach to selecting a preferred plan.<sup>36</sup> Rather than simply following the Order and

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<sup>31</sup> Order at 18-19.

<sup>32</sup> Id. at 64.

<sup>33</sup> Id. at 43.

<sup>34</sup> Id. at 64.

<sup>35</sup> Modified IRP at 76.

<sup>36</sup> Order at 64.

applying the minimax regrets and cost range analyses as recommended by Mr. Sercy, DESC has devised an “expected case scenario” approach that it details in the Modified IRP and which parallels the rejected “most likely scenario” approach.<sup>37</sup>

Finally, DESC continues to take an “average ranking” approach to quantify the NPV and fuel cost results for the resource plans under various scenarios, similar to the “average ranking” approach DESC used in its supplemental analysis presented in its rebuttal testimony. The Commission recognized the testimony of Mr. Sercy “that using average rankings actually has the effect of hiding risk rather than illuminating it” and ordered DESC to instead use Mr. Sercy’s minimax regrets and cost range methodologies for selecting a preferred plan.<sup>38</sup> Additionally, DESC has incurred the same DSM/EE error in its NPV and fuel cost analysis as already detailed above, whereby the Company treats DSM/EE as a sensitivity rather than a resource option, as required by the Order.

Although it is not clear that DESC’s failure to comply with the Commission’s Order regarding its plan selection methodology had a significant impact on the selection of the preferred plan in the 2020 Modified IRP, this error could affect plan selection in future IRPs and Updates.<sup>39</sup> Accordingly, Intervenor do not recommend rejecting the Modified IRP outright based on this noncompliance. Rather, DESC should be directed to correct these errors in its 2021 IRP Update and in future IRPs and Updates; and to continue exploring, in the ongoing IRP Stakeholder process, the implementation of risk metrics and other measures to address ratepayer risk in the IRP development process.<sup>40</sup>

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<sup>37</sup> Modified IRP at 76.

<sup>38</sup> Order at 64.

<sup>39</sup> After correcting for DESC’s noncompliance with the Order, RP8 still ranks as the best performing resource plan, but RP7b3 out-performs RP7 on the minimax regrets analysis. Several other resource plan rankings are also impacted in the revised resource plan rankings across the minimax regret and cost range analyses.

<sup>40</sup> Order at 92 ¶ 7b.

**C. The Modified IRP Vaguely Describes DESC's New 405 MW Combustion Turbine Plan, Which Should Be Rejected.**

For the first time, DESC discloses in its Action Plan a combustion turbine construction plan (“the CT Plan”) which would call for the replacement of older combustion units with aero-derivative replacement units.<sup>41</sup> DESC omitted any substantive details of the CT Plan from its Modified IRP, and did not include the CT Plan in its revised modeling. Yet, just 19 days after filing the Modified IRP, DESC notified the Commission (in a March 10, 2021 filing in Docket #2021-93-E) of its intention to “replace existing peaking generation at its Bushy Park, Parr, and Urquhart sites [...] with five modern aeroderivative-type turbines” totaling 405 MW of capacity. In that docket, DESC has asked the Commission to approve the CT Plan without certification review and without undergoing the competitive procurement requirements of Order No. 2007-626 and the Commission-approved merger settlement with the S.C. Solar Business Alliance (now CCEBA).

More important for this proceeding, the details and analytical support for the CT Plan are found *nowhere* in the 2020 IRP or in DESC’s revised modeling for the Modified IRP. In fact, none of the portfolios even evaluated the impacts of the CT Plan, which would add 85 MW additional capacity to DESC’s system. If the Commission decides to approve the Modified IRP, it should do so only on the condition that references to the CT Plan are removed from the Action Plan.

**1. DESC has failed to Comply with Act 62 Requirements Relating to the CT Plan.**

In its original IRP, DESC dedicated a total of one paragraph to describe “the possible replacement of existing peaking generation assets” as a “likely potential path to

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<sup>41</sup> Modified IRP at 84.

provide the flexibility to allow for further integration and additional expansion of intermittent renewable resources in the near-term.”<sup>42</sup> In its pre-filed testimony and at the hearing, DESC did not disclose the CT Plan, even though, as discussed below, DESC has been making preparations to implement the CT Plan for some time. The IRP’s brief mention of retiring and replacing current generation for purposes of system flexibility was addressed at length by SBA Witness Sercy in his direct testimony.<sup>43</sup> Even when Commissioners asked DESC Witnesses Bell and Lynch about short-term actions planned by the company, including retirements, neither witness mentioned the Company’s CT Plan. This is surprising given that, as discussed below, DESC had already engaged in extensive planning to replace 318 MW of current peaking capacity with 405 MW of new peaking capacity. This failure of transparency and disregard for the clear requirements of Act 62 has needlessly complicated and confounded both the ability of this Commission to rule on DESC’s modified IRP and the ability of intervenors to assess the merits and efficacy of DESC’s short-term action plan.

The requirements of Act 62 are unambiguous when it comes to the CT Plan, which DESC is now referring to as its “Peaking Turbine Modernization Program.”<sup>44</sup> For instance, Act 62 requires DESC to include in its IRP the resource plans representing “the range of demand-side, supply-side, storage, and other technologies and services available” to meet the utility’s service obligations.<sup>45</sup>

The Company’s swift and unitary commitment to a single fuel source to replace aging peaking and steam resources does not “fairly [evaluate] the range of demand-side,

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<sup>42</sup> Id. at 34.

<sup>43</sup> Tr. Vol. 3 at p. 607.42-52.

<sup>44</sup> Modified IRP at 84.

<sup>45</sup> S.C. Code Ann. § 58-37-40(B)(1).

supply-side, storage, and other technologies and services available” to meet peaking needs. Nor does it characterize the actual needs of the system in a manner that allows parties to evaluate how much and what type of peaking generation is actually needed. The Company has simply skipped over the statutorily-required analysis and review.

Act 62 also requires that the IRP include the Company’s “plans for meeting *current* and future capacity needs with the cost estimates for all proposed resource portfolios in the plan.”<sup>46</sup> The Company has styled its peaker replacement plan as a like-for-like replacement—i.e., a replacement of current capacity resources. But Act 62 requires the submission of plans to meet not only future capacity needs, but also current capacity needs. This provision of Act 62 is consistent with its repeated focus on retirement and end of useful life decisions. As with coal retirement, Act 62 requires the utility to examine and the Commission to approve, modify, or reject, plans to retire peaking resources.

Act 62 also requires that the Company include an analysis of the cost and reliability impacts of all reasonable options available to meet projected energy and capacity needs.<sup>47</sup> Those projected needs—whether current or related to future growth or retirements—must include a cost and reliability analysis. Such cost and reliability figures are entirely missing from DESC’s original IRP, its Modified IRP, or its request for waivers of regular order under the requirements of statute, settlement provisions, and prior Commission orders.

In summary, even in its Modified IRP, which at two paragraphs includes only slightly more detail on the CT Plan than the original IRP, DESC fails to meet the above Act 62 requirements that speak directly to the need for fair evaluation of resource options that include facility retirements and replacement considerations, remaining estimated life

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<sup>46</sup> Id. § 58-37-40(B)(1)(g) (emphasis added).

<sup>47</sup> Id. § 58-37-40(B)(1)(h).

for specific facilities, and cost and reliability impacts for meeting energy and capacity needs.

2. The Modeling in the IRP and Modified IRP is Not Consistent with the CT Plan.

Far from including its actual CT Plan within the IRP and the associated required analysis, the original IRP included information that led even seasoned IRP experts to conclude that DESC planned no major generation decisions in the near term (CCEBA, CRA, ORS). The DESC IRP charts indicating “probable retirement dates” and capacity changes omitted any short-term retirement of peaking resources, and positively asserted alternative retirement dates and capacity additions. No party could have been provided adequate notice from these charts that every peaker on the DESC system would be potentially up for bid—under the Company’s new filings—in the Spring of 2021.

For example, in DESC’s RP8 model results, new combustion turbine capacity is *not* added until 2028 and beyond and stems from the capacity needs associated with the Wateree and Williams retirement – not an additional need for flexibility. The replacement of existing combustion turbines should be included in the IRP process to ensure that replacement, if necessary, meets the needs of the *future* system rather than provide a similar replacement to legacy assets.

In addition, as Mr. Stenclik’s direct testimony stated, “DESC did not select the Aero units as expansion resources in any scenario except RP8, which evaluated the coal retirements. DESC provided no justification for its selection of the Aero unit for RP8, and it does not appear to be based on an economic criterion or otherwise.”<sup>48</sup> Likewise, there is no justification in the Short Term Action Plan for the selection of Aero units over a

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<sup>48</sup> Tr. Vol.3 p. 705.9.

conventional combustion turbine; at an increased cost, DESC should be justifying its decision for the selection of the Aero units. While Aero gas turbines provide enhanced flexibility when compared to conventional frame combustion turbine technology, it is also more expensive, which is why DESC should be evaluating other alternatives to a one for one swap of its current gas peaker plants. In addition, battery energy storage and hybrid solar+storage projects can provide more flexibility than aeroderivative technology. This includes near instantaneous “start” times for discharging, fast frequency response at speeds faster than governor response, faster ramping and regulation capability, and the ability to act as both a flexible load and generator.

Despite Act 62’s requirements for the utility to submit its plans for review by the Commission, indicate estimated retirement dates and estimated useful lives for all generation resources, transparently evaluate reliability needs, and explain not only future capacity needs, but also current capacity needs, DESC did not include any of these required basic features for these peaking and gas resources in either its initial filing or its Modified IRP.

The retirement and replacement of DESC’s existing generator fleet should have been included in the IRP process, including the Modified IRP. DESC’s preferred portfolio RP8 did not include any retirement or replacement of other combustion turbine generators. To do so outside of the IRP process defeats the purpose behind why utilities engage in *Integrated* Resource Planning and fails to allow the Commission to see the entire picture and the impacts these new peaker plants can have on the entire system. Intervenors therefore recommend that the Commission reject the CT Plan.

3. DESC Has Not Been Transparent Regarding its Preparations to Implement the CT Plan

DESC's failure to fully disclose or analyze the CT plan in the IRP or Modified IRP is particularly glaring given that DESC has been preparing to implement the CT Plan for some time. For example, DESC was apparently pursuing Federal Energy Regulatory Commission ("FERC") approval for changes to the interconnection tariffs that enable its CT Plan while claiming that no near-term major generation decisions were necessary. Although it is now clear that DESC's proposal to FERC would enable DESC's peaker replacement plan, none of these details were included in the IRP, IRP testimony, or mentioned by DESC witnesses at the hearing.

4. The CT Plan must be rejected.

The CT Plan is perhaps the most egregious example of an apparent continued reluctance on DESC's part to view the IRP process as integral to its resource acquisition activities. As another example, DESC suggests in its Modified 2020 IRP that its planned gas buildout may not be feasible to implement in the long run due to gas supply constraints.<sup>49</sup> In an ostensible attempt to minimize the importance of its resource plan and to preserve as much flexibility for itself as possible to make procurement decisions outside of the IRP process, DESC states in the Modified 2020 IRP that

Given the pace of change in customer expectations, technological advances, and environmental policies, it is important that the Company remain flexible with respect to resource plans and asset procurement. Resource plans will be updated to reflect current needs and information when future procurement or retirement decisions are considered based in them. The fact that DESC has modeled the procurement or retirement of any resource in

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<sup>49</sup> Specifically, DESC states, "[t]o maintain reliability while retiring coal generation, RP8 increases system reliance on natural gas relatively quickly compared to other resource plans (although all resource plans envision this switch happening by the end of the planning horizon). This increased use of natural gas will require an increase in the capacity of the natural gas pipelines that deliver gas into South Carolina, which is limited today." Modified IRP at 8.



this Modified 2020 IRP does not mean that DESC has made the decision to procure or retire that resource. These decisions will be made based on the facts and analysis available at the time they are made.<sup>50</sup>

Based on this passage and the examples discussed in these comments, it appears that DESC misunderstands the purpose of resource planning as contemplated by Act 62. While the circumstances underlying an IRP are indeed constantly changing, the whole point of the IRP process is for the Company to employ a rigorous analytical process in developing its plan for resource acquisitions—in both the near and long term. While plans are subject to change based on changing facts and circumstances, the Company should strive to implement the plan included in the then-currently approved IRP, particularly in the near term. If the Company instead pursues resources in a manner that is not consistent with its IRP, it should be required to document, explain, and provide analytical support for resource acquisition decisions that depart from those outlined in the IRP.

All together, these examples, coupled with the language quoted above, suggest that DESC still does not view the IRP as integral to its own planning processes; many of the recommendations below are made in light of these concerns.

**D. DESC's new reliability evaluation metrics misrepresent state-of-the-art inverter technology and highlight a clear bias towards conventional fossil technology.**

In the Modified IRP, DESC introduces a new qualitative assessment of reliability for each portfolio evaluated.<sup>51</sup> This reliability assessment was not included in the original IRP and has not been reviewed by Intervenors or the Commission. Reliability assessments are an important aspect of any long-term plan, and it is often difficult to ascribe a monetary value to reliability. But the Commission should understand that DESC's reliability

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<sup>50</sup> Id. at 5.

<sup>51</sup> Id. at 67-72.

assessment is arbitrary and does not rely on any system modeling or *quantitative* assessment of any resources. Instead, it is a qualitative assessment that relies on the judgment of DESC planning staff. Unfortunately, DESC's reliability factors show clear bias towards conventional fossil technology and a misrepresentation or misunderstanding of inverter-based resources.

Inverter-based technology, which includes solar, storage and wind, is rapidly improving as the installed resource capacity increases and experience grows. Unlike conventional fossil technology, which is limited by the physical characteristics of the equipment, inverter-based resources are largely controlled by computer software. The performance of the equipment is therefore determined by the software controls developed for each plant and the use case it is designed to emulate. This affords a high degree of flexibility, increased performance, and a broad suite of grid services *provided that the inverters are set correctly*. This capability has been routinely demonstrated with actual installed wind, solar, and hybrid projects across North America.<sup>52,53,54</sup>

Specifically, there are several considerations that should be incorporated into the reliability rankings to better reflect inverter-based resources. Since RP8 includes the highest levels of renewable energy and storage, these changes to the reliability metrics will not change the final outcome of the preferred portfolio ranking. However, Intervenors

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<sup>52</sup> Loutan, et al., *Demonstration of Essential Reliability Services by a 300-MW Solar Photovoltaic Power Plant*, National Renewable Energy Laboratory, March 2017, <https://www.nrel.gov/docs/fy17osti/67799.pdf>

<sup>53</sup> Loutan, et al., *Demonstration of Capability to Provide Essential Grid Services from Avangrid Renewables Tule Wind Farm*, California Independent System Operator, March 2020, <https://www.caiso.com/Documents/WindPowerPlantTestResults.pdf>

<sup>54</sup> Gevorgian, et al., *Provision of Grid Services by PV Plants with Integrated Battery Energy Storage System*, National Renewable Energy Laboratory, November 2020, <https://www.nrel.gov/docs/fy21osti/78140.pdf>

believe these changes will allow for improved analysis for future IRPs and long-term planning efforts.

- **Limited Energy Source:** DESC assigned an energy duration of 16-hours/day to provide full reliability benefits.<sup>55</sup> This is an onerous energy requirement at current levels of storage. Currently peak demand periods are short, and shorter duration resources can still have high value for system reliability. It is not until higher levels of storage integration that longer durations will be required for reliability. DESC should conduct detailed modeling of energy limited resources to calculate the effective load carrying capability (“ELCC”) of resources with different energy limitations before determining an arbitrary 16-hour threshold.
- **Dispatchability:** DESC notes that intermittent resources like solar are not dispatchable.<sup>56</sup> However, it should be noted that inverter-based resources, whether solar, storage, or wind are highly dispatchable if configured to do so. For example, solar and wind resources can follow regulation or dispatch signals with a high degree of accuracy. While there can be an economic cost of doing this (i.e., curtailment), the technology is capable of being dispatched equal to or better than conventional resources.
- **Operational Flexibility:** DESC weighs each resource on the ability to cycle and ramp up and down with little or no adverse impact on fuel costs or physical damage to the unit. In the relative rankings across different technologies, battery energy storage is ranked lower than an Aeroderivative CT and on par with a combined

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<sup>55</sup> Modified IRP at 68.

<sup>56</sup> Id.

cycle generator.<sup>57</sup> It should be noted that battery energy storage can ramp at near-instantaneous speeds and can switch from full charge to full discharge in sub-second time frames. There is also no start-up time necessary. This makes battery energy storage the most flexible resource on the system and should be weighted accordingly.

- **Inertia:** DESC ascribes reliability value to generators that can provide inertia.<sup>58</sup> It is true that the inertia provided by synchronous machines provides a benefit to a system, but only to a point. Given that DESC's service territory is part of the Eastern Interconnect, the large and highly interconnected grid stretching from Manitoba to Florida and Maine to Arkansas, there is no incremental value or benefit for the inertia that new DESC resources would provide. There is already ample inertia on the grid from other synchronous units. Furthermore, there is no credible scenario in the transmission planning horizons where low system inertia will be an issue on the Eastern Interconnect due to its large size. Therefore, the benefits of inertia from the candidate resources are irrelevant in this context.
- **Black Start:** DESC correctly identifies black start capability as an important grid service, and one that can be provided by both Aeroderivative CTs and battery energy storage (if designed to do so). However, DESC applies a higher weight to black start capability from Aeroderivative CTs despite there being no differentiation in the service they provide.<sup>59</sup>

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<sup>57</sup> Id. at 68, 70.

<sup>58</sup> Id. at 69.

<sup>59</sup> Id. at 69-70.

In addition to misrepresenting the grid services that can be provided by inverter-based resources, DESC also failed to include other important aspects of reliability. For example, fuel diversity and fuel supply risks are an important aspect of reliability. DESC's 2014 rolling blackouts were caused by extreme cold weather conditions and failures with gas infrastructure and supply – similar to the recent February 2021 blackouts in Texas.<sup>60</sup> Reliability could be improved with a more diverse resource mix.

Attached in Appendix A, Intervenors provide suggestions to adjust the “Reliability Factors by Resource Type” table developed by DESC.<sup>61</sup> Highlighted cells represent changes to DESC's table, with green representing a relative increase in reliability weighting for a given resource, and red represents a relative decrease. Intervenors recommend that the Commission order DESC to adjust its Reliability Factors consistent with Appendix A. The net effect of these changes maintains RP8 as the most reliable scenario, but by a larger margin due to the integration of inverter-based resources. In addition, RP7, with a large solar PPA buildout, becomes the second most reliable scenario.

Intervenors do not believe that the Modified IRP should be rejected based on the inclusion of these new qualitative reliability assessment criteria. However, if the Commission approves the Modified IRP it should clarify that such approval does not represent the endorsement of DESC's criteria. The Commission should instead direct DESC to include the development of fact-based, *quantitative* reliability (which do not rely

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<sup>60</sup> Christina Elmore Prentiss Finlay, Post and Courier, *Cold, demand send power plants reeling SCE&G's rolling blackouts leave us shivering in the dark Charleston County schools to follow normal schedule Wednesday* (Jan. 6, 2014), [https://www.postandcourier.com/archives/cold-demand-send-power-plants-reeling-sce-gs-rolling-blackouts-leave-us-shivering-in-the/article\\_eee3b3e8-c943-5ee7-a0ed-e642aa29eeb0.html](https://www.postandcourier.com/archives/cold-demand-send-power-plants-reeling-sce-gs-rolling-blackouts-leave-us-shivering-in-the/article_eee3b3e8-c943-5ee7-a0ed-e642aa29eeb0.html)

<sup>61</sup> Modified IRP at 70.

solely on the engineering discretion of DESC staff) in the ongoing IRP Stakeholder process.

### **III. The Commission Should Approve the Modified IRP with Two Conditions.**

Under the EFA, the Commission has the authority to “determine whether to accept” DESC’s Modified IRP “or to mandate further remedies that the commission deems appropriate.”<sup>62</sup> In making its determination, the Commission must determine that the proposed plan “represents the most reasonable and prudent means of meeting the electrical utility’s energy and capacity needs,” after balancing the factors enumerated in the statute.<sup>63</sup> Based on the foregoing, the Commission should approve the Modified IRP, with two important conditions that are necessary to ensure that it is the “most reasonable and prudent” plan.

First, the Commission should not approve the Company’s CT Plan mentioned for the first time in the Modified IRP’s Action Plan. As discussed in Section II.B.3, the CT Plan was not analyzed through the proper evaluation of resource portfolios required by S.C. Code § 58-37-40(B)(1)(e), and its omission from the original 2020 IRP, the modeling for the Modified IRP, and disclosure for the first time in the Modified IRP Action Plan constitute a flagrant violation of the spirit and letter of Act 62 which frustrates the opportunity for Commission and stakeholder review. It should be rejected.

Second, the Commission should approve RP8 and further require the addition of near-term additions of fuel-free clean energy resources consistent with RP7b to reduce cost and risk for ratepayers. It appears that RP8 has not yet been modeled with optimal near-term solar and storage additions. As testified to by the Intervenors at length in this

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<sup>62</sup> S.C. Code Ann. § 58-37-40(C)(3).

<sup>63</sup> Id. at § 58-37-40(C)(2).

proceeding, however, the failure to consider appropriate additions of clean energy in the near-term undermines the Commission's ability to determine that a given resource plan is in fact the most reasonable and prudent plan under the requirements of the statute. This situation is exacerbated by the failure of DESC to implement capacity expansion modeling capabilities prior to conducting its 2020 IRP and further demonstrates why the use of capacity expansion modeling will allow the Company to more easily and directly consider an appropriate range of resource plan options during the development of future IRPs.

While RP8 currently shows the highest amount of renewable energy of the portfolios evaluated in the long-term, a portfolio that only reaches 19% renewable energy as a percentage of total generation *by 2049* is not ambitious. The fact that RP8 had the highest renewable energy of any of the portfolios evaluated and was also the lowest cost plan indicates that other potential portfolios could have been evaluated with higher renewable levels at lower or similar costs.

DESC's preferred portfolio lags far behind Dominion Energy's corporate strategy of net zero emissions across all electric and natural gas operations by 2050. It is also significantly lower than other peer utilities, such as Dominion's Virginia Electric and Power Company IRP, which reaches 40% renewables by 2035.<sup>64</sup> The Commission should order DESC in future IRPs, including the 2021 IRP Update, to evaluate portfolios that replace coal generation with state-of-the-art and cost-effective clean energy-only alternatives.

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<sup>64</sup> Dominion Energy 2020 Virginia Integrated Resource Plan, Appendix 5H – Energy Generation by Type for Plan B, p. 237, <https://www.dominionenergy.com/-/media/pdfs/global/2020-va-integrated-resource-plan.pdf?la=en&rev=fca793dd8eae4e4e4ee42f5642c9509>.

**IV. The Commission Should Implement the Order's Requirement to Open a Coal Retirement Docket Immediately to Transition from Planning to Procurement of Clean Energy Replacement Resources As Soon as Possible.**

As stated in the Commission's Order:

In order for the Company to meet the December 31, 2025 deadline to retrofit Williams and Wateree, the Commission is opening a new docket to assess the retirement and replacement of the Company's coal plants. This proceeding will evaluate the reliability risks and environmental costs of continued operation of the coal plants as well as options, informed by resource bids, to replace legacy coal technology with state-of-the-art clean energy. DESC is required to perform a comprehensive coal retirement analysis to inform development of its 2022 IRP Update..."<sup>65</sup>

In addition, the Commission required "DESC, in coordination with ORS, [to] establish an ongoing IRP Stakeholder Process for the purpose of considering, and inviting stakeholder input and review on, certain potentially complex changes to DESC's IRP development methodology, inputs and assumptions. The IRP Stakeholder Process shall initially consider the following issues...c. comprehensive retirement analysis of DESC coal plants..."<sup>66</sup>

Pursuant to the Order, the Commission should immediately open the coal retirement and replacement docket to "evaluate the reliability risks and environmental costs of continued operation of the coal plants as well as the options, informed by resource bids, to replace legacy coal technology with state-of-the-art clean energy."<sup>67</sup> According to the Modified IRP, "[i]n 2021, the Company began studies to determine the potential benefits of retiring its four existing coal units before the end of their useful lives."<sup>68</sup> Mr. Stenclik's testimony showed partial replacement of the retiring coal plants with solar and battery storage resources can be a viable solution that results in savings to ratepayers. This was

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<sup>65</sup> Order at 40.

<sup>66</sup> Id. at 91-92.

<sup>67</sup> Id. at 40.

<sup>68</sup> Modified IRP at 22.



demonstrated in Mr. Stenlik's direct testimony, which retired 1,294 MW of coal capacity and replaced it with only 460 MW of battery storage and solar capacity while maintaining minimum reserve margin requirements.<sup>69</sup> Within the coal docket, DESC should, consistent with the Commission's Order, evaluate a scenario without gas replacement that includes candidate resource plans with "near-term deployment of renewables" and that "consider alternative portfolios that retire Williams and Wateree early and replaces them with clean energy technology."<sup>70</sup>

More important is the timing of the retirement studies. The Commission's Order required the retirement studies to be done in time to inform the 2022 IRP Update. However, under DESC's current schedule, that won't happen. DESC stated in the Modified IRP that it planned to conduct the Wateree retirement study in 2021 and the "Williams Station and Cope Station during the second year of the three-year short-term action," in other words, sometime in 2022. At a recent stakeholder meeting, DESC stated that it would begin the Williams retirement study in early 2022 and complete it by the end of 2022. This extended timeline results in only the Wateree retirement study being able to inform the 2022 IRP Update, in contravention of the Commission's Order. These retirement studies are imperative to the planning process and the success of the coal docket. In order to ensure that the retirement studies are done in time to inform the 2022 IRP Update, the Commission should immediately open the coal docket and set deadlines for the completion of the retirement studies.

**A. DESC should transition from planning to procurement for replacement resources as soon as possible.**

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<sup>69</sup> Tr. Vol.3 p.705.33-34.

<sup>70</sup> Order at 89 ¶6a, 40.

The retirement of the Wateree and Williams coal plants and replacement with new resources constitutes a large change to the DESC system. While the IRP process develops a useful plan and roadmap for the utility, the Intervenor urge the Commission and DESC to begin the procurement process as soon as possible, as this Commission envisioned would happen when it stated it would open a new docket to assess the retirement and replacement of the coal plants, informed by resource bids.<sup>71</sup> The EPA Effluent Limitation Guidelines require retirement no later than December 31, 2028. While seven years may seem like a long time, development of new generating resources takes time. This is especially true in a competitive procurement which requires specification of system needs, retirement analysis, a formal request for proposals, proposal review, contract negotiations, regulatory approvals, project development and engineering, construction, and commissioning.

The longer the Commission and DESC wait to begin a formal procurement process, the fewer options will be available. In addition, other unexpected changes, such as new environmental regulations, fuel price volatility, and generator failure, could take place in the interim that would make earlier coal retirements more attractive. Starting the procurement process now affords flexibility later.

Intervenor recommend that DESC initiate an “all source procurement” where Independent Power Producers and developers can compete against DESC proposals in a technology neutral manner.<sup>72, 73</sup> Allowing clean energy resources like solar and storage to

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<sup>71</sup> Order at 40.

<sup>72</sup> Energy Innovation, *Making the Most of the Power Plant Market: Best Practices for All-Source Electric Generation Procurement*, <https://energyinnovation.org/wp-content/uploads/2020/04/All-Source-Utility-Electricity-Generation-Procurement-Best-Practices.pdf>.

<sup>73</sup> Shwisberg et al., *How to Build Clean Energy Portfolios: A Practical Guide to Next-Generation Procurement Practices*, <https://rmi.org/how-to-build-ceps/>

compete against other generating resources ensures that DESC ratepayers receive the lowest cost resources.

An all-source procurement means that whenever the utility and regulators determine that new resources are needed for the system, those resources are procured through a single unified resource acquisition. While the IRP provides indications on the timing and types of resources that may be most economic, an all-source procurement RFP for additional resources is done in a technology neutral manner. Rather than specifying the exact type of resource (i.e., technology, size, and specifications), the utility and regulator instead specify the system needs.<sup>74</sup> For example, the all-source procurement will specify a total quantity of energy, capacity, and grid services that are needed to replace the Wateree and Williams coal plants, but leave it up to competitive solicitation to determine the best mix of resources to meet the system needs. Rather than awarding replacement resources to a single project, the utility and regulator select a *portfolio* of resources that best meet the needs of the system using actual bid data for each technology. This allows for a least cost portfolio of renewable energy, battery storage, demand response, DERs, and energy efficiency to compete directly with natural gas resources proposed by the utility or independent power producers.

The all-source procurement process provides a valuable link between the planning and procurement process. According to Rocky Mountain Institute, “utilities, regulators, and stakeholders can holistically consider all resource options, including DERs and non-procurement pathways, and assess the need for procurement in the context of longer-term

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<sup>74</sup> Wilson, et al., *Best Practices for All-Source Electric Generation Procurement*, Energy Innovation, April 2020, <https://energyinnovation.org/wp-content/uploads/2020/04/All-Source-Utility-Electricity-Generation-Procurement-Best-Practices.pdf>

planning objectives and risks. [In addition], utilities can use actual price and operational capability information from bids to inform planning decisions.”<sup>75</sup>

Rocky Mountain Institute provides that the all-source procurement process is made up of three discrete steps:<sup>76</sup>

1. Define and validate system needs: using the IRP as a starting point, DESC would write *technology neutral* statements on grid needs that include requirements on energy, capacity, and grid services. The Commission and stakeholders participate to ensure system needs are appropriate and do not unnecessarily exclude particular resources.
2. Develop RFP documents in a fair and transparent manner by developing bid requirements, terms, sizing and other solicitation specifics that allow different resource types to participate.
3. Select the optimal resource portfolio: DESC and the Commission selects a portfolio using a value-based approach to optimize system needs, costs, and other societal benefits. Most importantly, the outcome of this process is a *portfolio* of resources selected from multiple bidders that meets system needs, not an individual project.

During this procurement portfolio process, the Commission should also evaluate project proposals on a full suite of ranking metrics like the ones utilized by DESC, including cost, emissions, flexibility, reliability, and generation diversity. Intervenors therefore recommend that the Commission immediately open the coal docket in order to

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<sup>75</sup> Shwisberg, et al., *How to Build Clean Energy Portfolios, a Practical Guide to Next-Generation Procurement Practices*, Rocky Mountain Institute, <https://rmi.org/how-to-build-ceps/>

<sup>76</sup> Id.

“evaluate the reliability risks and environmental costs of continued operation of the coal plants as well as the options, informed by resource bids, to replace legacy coal technology with state-of-the-art clean energy.”<sup>77</sup>

**B. Transparency and the Stakeholder Process are necessary to inform the upcoming retirement studies and the coal retirement and replacement docket.**

According to DESC, “[i]n 2021, the Company began studies to determine the potential benefits of retiring its four existing coal units before the end of their useful lives. [...] The Power Flow, Stability, and Short Circuit Analysis for each retirement, among other transmission analyses, must consider the effects of prior retirements. These parameters and analyses constitute the transmission impact analysis.”

The initiation of retirement studies was a key component of Sierra Club’s recommendations to the Commission, and Intervenors appreciate the Commission requiring DESC to not only conduct these studies but to commit to opening a new docket to assess these studies and what should replace them. However, it is important that these retirement studies be conducted in full transparency, with transmission data and assumptions fully accessible to intervenors and their expert consultants. As the Commission and DESC recognize, retirement studies are critical to ensuring reliable operation of the DESC grid and are highly technical. It is imperative that stakeholders and their experts have ample time to review the study inputs, assumptions, and findings and conduct independent analysis, if necessary. While the results of this analysis are required to “inform the development of [DESC’s] 2022 IRP,” early review and participation will ensure a timely transition in the future. In order to ensure full transparency, the retirement

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<sup>77</sup> Final Order at 40.

studies need to be reviewed under the umbrella of the Commission ordered coal docket. Therefore, Intervenor recommend that the Commission immediately open the coal docket to address this issue.

**V. The Commission Should Reaffirm the Order's Requirements for Upcoming IRPs**

**A. Capacity Expansion Modeling**

Pursuant to the Commission's Order, DESC is engaging with stakeholders to evaluate and select a capacity expansion model for use in its next IRP. In the two workshops held thus far, DESC and its consultant, Charles River Associates, have been receptive to feedback. It is not clear, however, whether that feedback will be incorporated into the selection of a capacity expansion model, or simply noted.

While PLEXOS clearly remains DESC's model of choice, there are a number of concerns about the model that have not yet been fully addressed. First, the Order included a simple requirement that any modeling software vendor provide the user manual for its software to intervenors so that they can efficiently understand how it works. DESC and the PLEXOS vendor have not yet committed to meet that directive and instead have suggested that intervenors would be given lesser access only to model "documentation" which may not include access to features included in the full manual. The ability for intervenors to obtain the actual model manual is a basic requirement for transparency.

Second, in a very positive move, PLEXOS' vendor, Energy Exemplar, has agreed to a discounted, project-basis model license along the lines of that required by the Commission's Order. However, when the consultants for CCL and SACE requested and were supplied with a copy of the license agreement, they discovered several serious

concerns with the agreement that could make the license unusable by stakeholders.<sup>78</sup> When they attempted to resolve these issues with Energy Exemplar, they were told that no edits to the license would be accepted.

As it stands currently, DESC has not yet fully complied with the capacity expansion modeling requirements of the Order, which required DESC to provide certain things (such as the manual) that are not yet fulfilled and that will be essential for later, time-sensitive tasks.

## **B. Recommendations for DSM in Future IRP Proceedings**

The Modified 2020 IRP has demonstrated that portfolios with a higher level of DSM are lower cost for ratepayers. As outlined below, however, problems remain with DESC's analysis of DSM: the Company's representation of DSM in its load forecast; its underlying valuation of DSM avoided costs; its apparent over-estimate of DSM program costs in the long run; and the way in which it accounts for line losses. Given DESC's present adoption of a 1% savings target and the requirement under the Order for it to evaluate higher levels of energy efficiency ("EE") savings, these remaining issues should be addressed in the IRP Stakeholder and DSM Advisory groups for inclusion in the 2021 IRP update.

### **1. DESC's Rapid DSM Assessment**

The Order directed DESC to work with the DSM Advisory Group to conduct a rapid assessment of the cost-effectiveness and achievability of ramping up its current DSM

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<sup>78</sup> For example, the license agreement is restricted to non-IRP purposes, requires significant additional expenditures for training and support, appears to preclude intervenors' consultants from using a license, and is limited to twelve months (which is shorter than the duration of even this IRP proceeding).

portfolio to achieve savings of at least 1% of retail sales in the program years 2022, 2023 and 2024, and required that DESC include this analysis in its Modified 2020 IRP.<sup>79</sup>

The Modified IRP includes a revised rapid assessment, informed by feedback received in the DSM Advisory Group, concluding that “there is a path forward for DESC to achieve 1% savings in years 2022, 2023, and 2024.”<sup>80</sup> The final rapid assessment results validate the achievability of additional cost-effective lifetime savings of 438 GWh based on modifications to existing programs.<sup>81</sup> However, there are several concerns with the rapid assessment results and how they were reported in the Modified 2020 IRP:

- *DESC Reported Savings Levels Net of Opt-Out Customers Rather than Relative to Total Retail Load:* First, while the revised rapid assessment was completed too late to be fully included in the Modified 2020 IRP, DESC did include a DSM case (which DESC refers to as “High”) with a 1% annual savings level. DESC fails to mention, however, that it is not calculating EE savings as a percentage of the total retail sales forecast in its IRP; instead, it is calculating savings as a percentage of the retail sales that remain after subtracting sales to large customers that have opted out of DESC’s DSM programs and rider. This adjustment is inconsistent with the premise of resource planning, in which a company is planning to meet its actual forecasted load. If it were measured against total retail load, the “High” 1% savings level would only be 0.7 to 0.8% of total retail sales.<sup>82</sup> **As a result,**

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<sup>79</sup> Order at 19 (finding number 13).

<sup>80</sup> Modified IRP at Appendix D, p. 104.

<sup>81</sup> Ibid, page 97.

<sup>82</sup> Based on information contained in DESC’s modeling files “DSM Costs (012221)” and “2021-2040 Annual DESC Electric Energies\_base” (sic).



**the DESC rapid assessment is not actually designed to reach a 1% level of savings; to comply with the Commission's Order, DESC should be required to calculate its savings as a percentage of total retail sales, rather than net of sales to opt-out customers.**

- *DESC's Revised Portfolio Relies on Short-Lived and Expensive Measures:*

While DESC's rapid assessment demonstrates it is possible to increase savings, the measures evaluated in the rapid assessment do not necessarily represent an optimal DSM portfolio. Close to 90 percent of the increased annual savings in the revised rapid assessment portfolio come from Home Energy Reports, a program with a one-year measure life that DESC has modified to switch from opt-in to opt-out two years earlier than expected.<sup>83</sup> By relying so heavily on this program, DESC has not leveraged savings that could provide lower cost and higher value to DESC ratepayers. In the revised portfolio, there are virtually no increased savings from residential heating, cooling, and water heating and there are also virtually no additional savings identified for the non-residential sector (0.01% increase for commercial and industrial). **While DESC's proposed modifications are cost effective and readily implemented, they do not replace the need for analyses and initiatives that target measures with longer measure lives and to expand mid-stream and up-stream incentive offerings.**

## 2. Levelized Cost of Saved Energy in the Modified 2020 IRP

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<sup>83</sup> Ibid, Figure 5 and Figure 6, page 106.

The results of DESC's modeling for the Modified IRP indicate that portfolios with higher levels of DSM were lower in cost when compared to the portfolios that contain the medium level of DSM. This result is unsurprising since by definition, cost-effective DSM reduces system cost. In conducting this analysis, however, DESC used unreasonably high assumptions for the levelized cost of saved energy ("LCSE"); had DESC used reasonable assumptions for the LCSE, portfolios with higher levels of DSM would have shown even greater cost savings.

The LCSE that DESC modeled in the 1% DSM case was between \$40 and \$57 per MWh,<sup>84</sup> much higher than the national LCSE of \$25 per MWh and the median value in the South of \$22 per MWh.<sup>85</sup> Even DESC's inflated LCSE is still much lower than the levelized costs it used for new gas resources. This speaks to not just the importance of accurately costing and valuing DSM, but also to the importance of leveraging lower cost supply-side resources as well, i.e., solar and battery storage.

In light of the fact that DESC's current LCSE appears inflated, **the Commission should direct DESC to employ a more reasonable LCSE in line with industry estimates in conducting its upcoming Market Potential Study ("MPS") and in developing future IRPs.**

### 3. EE Savings Reflected in DESC's Load Forecast

For the Modified IRP, DESC reflected the different levels of EE as reductions to the load forecast, but did not reduce the load forecast in 2020 and 2021 to account for EE impacts. In response to ORS 7-1a, DESC explained that "[t]he Company's short run

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<sup>84</sup> Calculated by Energy Futures Group based on modeling files made available by DESC after filing the Modified IRP.

<sup>85</sup> See Figure 5 of [https://eta-publications.lbl.gov/sites/default/files/manuscript.v9\\_nmf.pdf](https://eta-publications.lbl.gov/sites/default/files/manuscript.v9_nmf.pdf).

forecast projects sales and revenue by month for two years . . . . The Company assumes that most of the EE program impacts are captured in the trend analysis and so additional EE impacts are set to zero for the first two years.”<sup>86</sup> DESC’s load forecasts are the same for 2020 and 2021 for each level of DSM, and there is only a small difference between the forecasts for 2022. This is despite the fact that the incremental EE savings projected for 2021 and 2022 show different levels of savings, especially for the High DSM case.

Although this discrepancy may not be consequential for the portfolios modeled in the Modified IRP since we are almost halfway through 2021 and none of the portfolios include near-term changes to DESC’s portfolio, this approach should not be used in future IRPs. While there are different approaches utilities can take to account for EE impacts in the load forecast, DESC’s approach does not comport with standard practice. A trend analysis would not be able to capture any level of EE other than that which the Company recently implemented. This raises a difficulty in accurately including savings at anything other than recent historical levels. **The Commission should require DESC to include discussion of the load forecast and integration of EE impacts as a topic in one or more of the stakeholder meetings to be held in conjunction with development of the next IRP.**

#### 4. EE Profile Used in Modified IRP

DESC uses an “EE Profile” representing the hourly load impact of its EE programs for analytical purposes, including screening of individual EE measures for inclusion in programs, calculation of the energy costs avoided by the programs, and its performance incentive. EE Advisory Group members have sought more information on the composition

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<sup>86</sup> DESC response to ORS Data Request No. 7-1a. Docket No. 2019-226-E.

and use of the EE Profile but DESC has deferred key questions until later Advisory Group meetings.

It appears that there are several major problems with the EE Profile. Since this forms the basis for key DESC's assumptions regarding EE's impact on load, these issues are significant and warrant Commission attention.

First, the EE profile—like the Company's overall load profile—should show a clear diurnal pattern and weekday vs. weekend pattern. But the EE profile does not show any of this expected variation, nor does it align with the load profile at all. In fact, the EE profile experiences its peak value in an entirely different season and month than DESC experiences its summer peak or (more infrequent) winter peaks. And despite DESC experiencing much more frequent summer peaks, its EE profile shows more savings overall in the winter time, which is counterintuitive.

Second, DESC's EE profile relies on a weighting metric, in which over half of its EE savings are from a "central lighting control" measure that is not a dominant component of its EE portfolio.

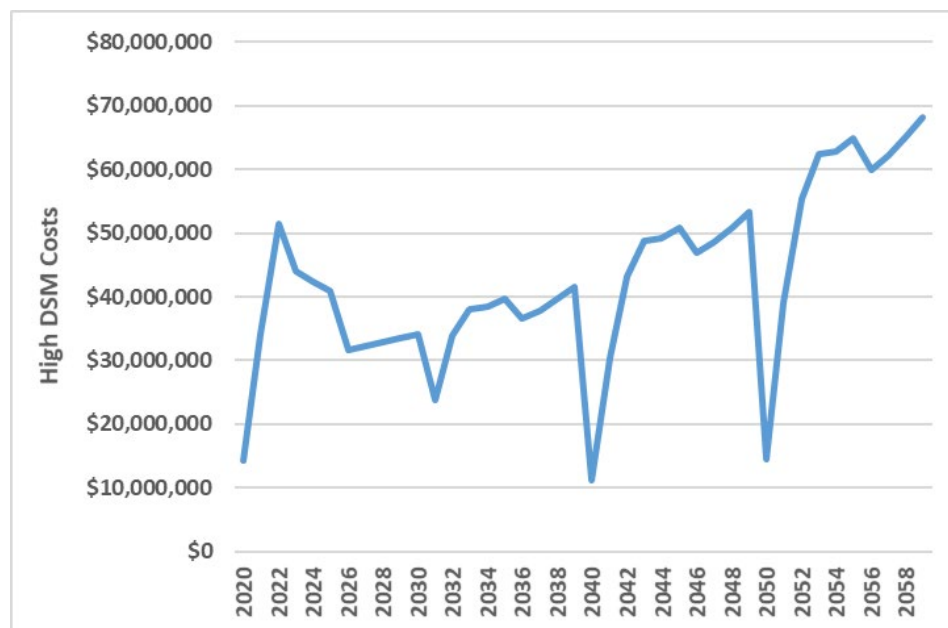
Finally, and most confusingly, DESC's EE profile shows frequent *negative* savings in its shape; in other words, the profile shows that EE measures *increase* energy usage during several months of the year. For example, two of the EE measures that most heavily contribute to the negative savings in the EE profile, Furnace/AC - SEER 16 measures, show net negative savings for half the year. Because this is a SEER 16 measure, which exceeds even the upcoming 2023 change to the minimum required efficiency for central AC units, it could not possibly be the case that this measure would replace a unit that is somehow *more* efficient during the summer thus resulting in more energy consumed

by the SEER 16 measure. Indeed, if that were the actual net effect of DESC's rebate for central AC/furnace measures it would be an indicator of fatally flawed program design.

**We recommend that the Commission require DESC to evaluate this issue with input from the IRP Stakeholder Group, and report the results of this evaluation in its next IRP Update.**

5. EE Costs Between 2030 and 2059

DESC used the MPS to characterize potential study costs for the period 2020 to 2029. However, DESC modeled EE costs after 2029 in a way that produces a cost stream that has significant price swings over the period 2030 to 2059. Figure 3 shows the costs modeled for the high EE case from 2020 until 2059. DESC's methodology relates EE costs and savings from the period 2030 to 2059 to the savings and costs from the potential study that covered 2020 – 2029. But it does so such that every ten years the costs restart with 2021 EE costs, leading to the strange pattern shown in Figure 1, below.

**Figure 1: High Case Energy Efficiency Costs Modeled by DESC<sup>87</sup>**

This approach does not make sense—it underestimates the cost of EE in two years, features large jumps in costs in other years, and is compounded by the fact that the cost of EE was already overstated, as discussed above.

**For future DESC IRPs and IRP Updates, we recommend that the Commission require that DESC present realistic and levelized DSM costs.** This puts DSM on a level playing field with supply-side resources because under DESC’s current approach, the entirety of program costs are accounted for in the net present value of revenue requirements, but the full lifetime of savings after 2040 are not included (since there are fewer years left in the planning period than there are years in the average measure life of the savings).

<sup>87</sup> Table created by Energy Futures Group from “DSM Costs (012221)” in DESC’s Modified 2020 IRP modeling files.

#### 6. Application of Line Losses to DSM

DESC used an average line loss percentage of 4.38% to reflect DSM savings in the energy and peak demand forecasts.<sup>88</sup> This line loss percentage is different from the 8% average and 15% peak line loss percentages reported in the Avoided Cost Report.<sup>89</sup> Since EE savings occur at the margin, and line losses grow exponentially with load, the use of average line losses undervalues the avoided costs associated with EE. As a result, using average rather than marginal line losses to model EE savings in an IRP will understate that value of those savings. **Therefore, the Commission should direct DESC to use marginal line losses in the calculation of avoided costs and in the translation of energy savings from the MPS (which are at the meter) to energy savings in the IRP (which are at the generator).**

#### 7. Volatility in DESC's Load Forecast and Need for Demand Response

There is significant volatility in DESC's load forecast, which is characterized by frequent peaks and valleys throughout the year. This matters because volatility in load can be an indication of the potential for additional demand response. A broad rule of thumb is that if the top 80 hours of load occurred across more than 20 days per year, or if most of the top 80 hours of load have a duration of five hours or less, then demand response is likely to be a useful solution. DESC's load forecast meets these criteria: looking at one forecast year (2023), 86% of DESC's forecasted peaks were 5 hours or less in duration, and occurred across 22 days. This indicates that demand response savings are not being accurately included in DESC's load forecast at their full value.

#### 8. DESC Ignored Impacts of Energy Efficiency on Bills in the Modified 2020 IRP

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<sup>88</sup> DESC response to SACE/CCL Data Request No. 2-10, Docket No. 2019-226-E.

<sup>89</sup> DESC Avoided Cost Report, Docket No. 2019-239-E.

Section 58-37-40(C)(2)(b) requires the Commission to consider, should it choose, to balance the factor of customer affordability and least cost into its evaluation of an IRP. To that end, DESC presented a Levelized Cost metric and Retail Rate Impact metric in its Modified IRP. Estimating bill and rate impacts is an imprecise exercise, particularly over a 40 year period. The bill impact estimates assume that a residential customer uses 1000 kWh per month regardless of the level of efficiency in any given portfolio. Put another way, residential customers are assumed to use 1000 kWh on average regardless of their participation in a DESC EE program. This is why it can be the case that—according to DESC’s metrics—RP8 has both the highest bills and highest rates and yet its overall system cost is lowest. The bill metric does not, therefore, provide meaningful information to the Commission.

To properly apply the bill impact analysis, average customer use should be pegged to average usage in the load forecast but adjusted for the decrease associated with the level of EE implemented in the given portfolio. The Commission should require that DESC measure bill impacts for each portfolio using this methodology in all future IRPs and IRP Updates.

9. Steps to Ensure Higher Future Levels of DSM Savings

The Commission’s Order also directed DESC to include in its Modified 2020 IRP action steps the Company will take to complete a comprehensive evaluation of the cost-effectiveness and achievability of DSM portfolios ranging from 1% to 2% savings. This action plan will require careful implementation by DESC with oversight by the Commission.



As discussed above, IRP analysis is intended to evaluate and match resource additions to the utility's forecasted energy and capacity load. Consistent with this purpose, EE savings should be considered based on total sales, not net of opt-outs. Opt-outs may be considered in sensitivity analyses, given that some customers opt out but retain the right to opt back into the programs. The forthcoming detailed analyses of savings levels at 1 to 2% in response to Order No. 2020-832 should be determined based on total retail sales, including customers who are currently opted out. DESC's exclusion of opt-outs in calculating savings inappropriately exaggerates the amount of savings DESC is taking credit for.

In its evaluation of higher-savings portfolios, DESC should also pursue midstream and upstream programs. DESC's rapid DSM assessment disregarded the potential for savings from midstream incentives based on a purported lack of interest from heating and cooling and lighting contractors and distributors.<sup>90</sup> By dismissing these programs, DESC is reducing its savings potential, and thus inappropriately suppressing savings.

DESC should stop treating both these issues—industrial and commercial opt outs and upstream or midstream initiatives—as immutable structural barriers, and approach them as current conditions that programs can and should be designed to address and reduce.

Further, DESC should use “cost effective and achievable” as the standard for evaluating the potential for higher-savings portfolios, not “reasonable and achievable” as used in the initial rapid assessment. The criteria for achievability should also be defined and open to discussion and review/vetting by stakeholders.

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<sup>90</sup> Modified IRP at 102.

The Commission should also exercise oversight and allow intervenor review and comment on the forthcoming MPS, which will be used by DESC in the evaluation of higher-savings portfolios. CCL and SACE have provided input through the DSM Advisory Group to help inform the scoping of DESC's new MPS, and the Commission should also exercise oversight and allow intervenor review and comment on the MPS to ensure that it complies with the directive in Order No. 2020-832 to evaluate DSM higher-savings portfolios, and will serve as a reasonable basis for DSM assumptions in the Company's IRPs.

## **VI. Relief Requested**

The Intervenors appreciate the time and effort taken by the Commission to review the comments and testimony of all parties. The stakeholder process is a critical part of long-term planning and the Commission's Order and DESC's Modified IRP shows the value of transparency and stakeholder and intervenor input.

The Intervenors also commend the selection of RP8 and the retirement of Wateree and Williams no later than December 31, 2028 as an important part of the energy transition in South Carolina. It will benefit ratepayers with lower cost electricity and benefit South Carolinians with a cleaner environment.

Under the EFA, the Commission has the authority to "determine whether to accept" DESC's Modified IRP "or to mandate further remedies that the commission deems appropriate."<sup>91</sup> In making its determination, the Commission must determine that the proposed plan "represents the most reasonable and prudent means of meeting the electrical utility's energy and capacity needs" after balancing the factors enumerated in the statute.<sup>92</sup>

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<sup>91</sup> S.C. Code Ann. § 58-37-40(C)(3).

<sup>92</sup> Id. at § 58-37-40(C)(2).

Intervenors recommend that the Commission approve RP8 as the most reasonable and prudent plan, with the addition of near-term renewable generation consistent with RP7b. Intervenors also request that the Commission reject the CT Plan in the Action Plan. We also ask that the Commission immediately open the coal docket, as indicated in its Final Order, in order to allow for full transparency in evaluating DESC's retirement studies and start the transition from planning to procurement for replacement resources as soon as possible. Lastly, the Intervenors recommend that the Commission require DESC to take the following actions in developing future IRPs, including the 2021 IRP Update:

- DESC should be required to evaluate additional portfolios that replace coal generation with state-of-the-art and cost-effective clean energy only alternatives.
- DESC should be required to adjust its Reliability Factors consistent with Appendix A.
- DESC should be directed to correct the plan selection errors, including its flawed application of the minimax regrets and cost range analyses, modeling of DSM/EE as a scenario instead of a resource, and the averaging of NPV and fuel costs, in its 2021 IRP Update and in future IRPs and Updates; and to continue exploring, in the ongoing Stakeholder process, the implementation of risk metrics and other measures to address ratepayer risk in the IRP development process.
- DESC should conduct additional modeling for its early coal retirement resource plans, RP3 and RP8. The additional modeling should include near-term deployment of solar and storage resources consistent with RP7-A and RP7-B. The updated modeling should be conducted in either:
  - The current docket;

- The 2021 IRP annual update; or
  - A DESC-specific procurement docket to be initiated immediately upon the issuance of an order approving the Modified IRP.
- Other than as required in Order No. 2020-832 and in an order ruling on the Modified IRP, DESC shall not make any changes to its modeling or other methodologies, or the sources of data from which it derives its planning assumptions, without disclosing those changes within its future updates, and describing in concrete and specific terms the impact of those changes on the analysis in the IRP. The Commission's approval of the Modified IRP shall not constitute Commission approval of any methodological changes or additions between the original IRP and the Modified IRP not specifically Ordered by the Commission. The Commission should permit public comment and/or intervenor testimony or comments regarding any such changes.
- DESC should be required to work with the IRP Stakeholder Group to (1) discuss its load forecast and integration of EE impacts; and (2) evaluate and correct the inconsistencies with its EE Profile.
- DESC should be required to, in its future IRPs, comply with the DSM/EE recommendations above, including calculating its savings as a percentage of total retail sales; employing a more reasonable LCSE in line with industry estimates, using marginal line losses in the calculation of avoided costs and in the translation of energy savings from the MPS to the IRP, and presenting realistic and leveled DSM costs in its next IRP.

Respectfully submitted this 20<sup>th</sup> day of April, 2021.

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# APPENDIX A

## Appendix A: Revised Reliability Factors by Resource Type<sup>93</sup>

On page 70 of the Modified IRP, DESC provides a list of reliability factors and a qualitative assessment of each technology's reliability benefits. This assessment relied on the judgment of DESC planning staff and unfortunately, DESC's reliability factors show clear bias towards conventional fossil technology and a misrepresentation or misunderstanding of inverter-based resources. Modern wind, solar, and battery technologies can be beneficial *contributors* to essential reliability services. In many cases, inverter-based resources can respond to grid changes faster, and more precisely than legacy fossil technology.

While Sierra Club is cautious to endorse a qualitative assessment of reliability services in place of quantitative modeling, the following tables provide recommended adjustments to the relative technology rankings. Reliability factors highlighted in red are reduced from DESC's Modified IRP, factors in green are increased, and grey highlights are removed from the rankings because they are unwarranted for reliability rankings.

Most notably the following adjustments were made:

- The energy duration benefits for fossil technology were reduced and the battery technologies were increased slightly. This reliability service was adjusted because a 16-hour duration threshold, as proposed by DESC, is overly restrictive. At current penetration levels, relatively short-duration resources can provide significant reliability and operational benefits.
- Dispatchability of Flexible Solar technologies was increased to match the other technologies. While Flexible Solar may not have the same Operational Flexibility ranking, it can be highly dispatchable and follow AGC and operator dispatch signals to the same degree of accuracy as other technologies. This requires the operators to curtail the plant, but this can be used as a viable mitigation when need for reliability.
- Automatic Generation Control was increased for battery storage and flexible solar technologies and reduced for coal units. Inverter-based resources are highly flexible and can follow AGC signals with a high degree of accuracy and faster speed of response if directed to do so.<sup>94</sup> This is one reason why PJM introduced a "Reg-D" market to compensate faster responding resources.<sup>95</sup>
- Inertia reliability factors were removed for all generating types. Given that DESC's service territory is part of the Eastern Interconnect, there is no incremental value or benefit for the inertia that new DESC resources would provide. There is no credible scenario in the transmission planning horizons where low system inertia will be an issue on the Eastern Interconnect.
- Black start grid service was made equal between aeroderivative and battery technologies. The ability to black start equipment and portions of the grid is binary - the

<sup>93</sup> Analysis done by Sierra Club expert, Derek Stenclik.

<sup>94</sup> Loutan, et al., *Demonstration of Essential Reliability Services by a 300-MW Solar Photovoltaic Power Plant*, National Renewable Energy Laboratory, March 2017, <https://www.nrel.gov/docs/fy17osti/67799.pdf>

<sup>95</sup> <https://www.pjm.com/-/media/training/nerc-certifications/gen-exam-materials-feb-18-2019/training-material/02-generation/4-1-regulation-market.ashx>

technology can either provide the service or not - and there should not be a differentiation between the technologies.

The net effect of these changes maintains RP8 as the most reliable scenario, but by a larger margin due to the integration of inverter-based resources. In addition, RP7, with a large solar PPA buildout becomes the second most reliable scenario.

Reliability Factors by Resource Type									
Scale 1 - 4 used to convey both relative importance of each attribute and how well the resource provides that attribute									
Unit Type	Coal Unit	Gas-fired Boiler	CC	Large Frame ICT	Aero ICT	Battery	Battery PPA	Flexible Solar	Solar PPA
Energy Storage						1	1		
Energy Duration	3	3	3	3	3	2	2	1	1
Dispatchability	2	2	2	2	2	2	2	2	
Op Flexibility	1	1	2	2	3	4	4		
Coincident Peak Output	4	4	4	4	4	3	3		
Automatic Generation	1	3	4	2	2	4	4	4	1
Fast Start					3	4	4		
Inertia (non-inverter)									
VAR Support	2	2	2	2	2	2	2	1	1
Geographic Diversity						1	1	1	1
Proximity to Load		1			1	1	1		
Synchronous Condensing					1				
Blackstart					1	1	1		
Total	13	16	17	15	22	25	25	9	4
Comparative Size*	6.0	1.0	5.5	5.2	1.3	1.0	1.0	1.0	1.0
Total Points	78	16	93.5	78	28.6	25	25	9	4

Designates a decrease in reliability factor  
 Designates an increase in reliability factor

\*Normalizes the comparison to standard value per 100MWs



Units Added/Retired by Resource Plan									
Portfolio	Coal Unit	Gas-fired Boiler	CC	Large Frame ICT	Aero ICT	Battery	Battery PPA	Flexible Solar	Solar PPA
RP1	-2		1	4					
RP2	-2			5					
RP3	-2		1	4					
RP4	-2	-3		5					
RP5	-2		1	3		1		4	
RP6	-2			4				4	
RP7	-2			4		1			4
RP7a	-2			5					4
RP7b	-2			4			1		4
RP8	-2		1	1	3	7		19	

Units Added/Retired by Resource Plan											
Portfolio	Coal Unit	Gas-fired Boiler	CC	Large Frame ICT	Aero ICT	Battery	Battery PPA	Flexible Solar	Solar PPA	Combined Factors	Ranking
RP1	-156	0	93.5	312	0	0	0	0	0	250	2
RP2	-156	0	0	390	0	0	0	0	0	234	5
RP3	-156	0	93.5	312	0	0	0	0	0	250	2
RP4	-156	-48	0	390	0	0	0	0	0	186	10
RP5	-156	0	93.5	234	0	25	0	36	0	233	6
RP6	-156	0	0	312	0	0	0	36	0	192	9
RP7	-156	0	0	312	0	25	0	0	16	197	7.5
RP7a	-156	0	0	390	0	0	0	0	16	250	2
RP7b	-156	0	0	312	0	0	25	0	16	197	7.5
RP8	-156	0	93.5	78	85.8	175	0	171	0	447	1

STATE OF SOUTH CAROLINA  
BEFORE THE PUBLIC SERVICE COMMISSION  
DOCKET NO. 2019-226-E

In the Matter of: )

South Carolina Energy Freedom Act )

(House Bill 3659) Proceeding )

Related to S.C. Code Ann. Section )

58-37-40 and Integrated Resource )

Plans for Dominion Energy South )

Carolina, Incorporated )

CERTIFICATE OF SERVICE

I certify that the following persons have been served with one (1) copy of the Joint Comments filed on behalf of the South Carolina Coastal Conservation League, Southern Alliance for Clean Energy, Carolinas Clean Energy Business Alliance, and the Sierra Club by electronic mail at the addresses set forth below:

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